NOTES ON BASE

This is one sheet in a series of topographic map sheets covering that part of the surface of Mercury that was illuminated during the Mariner 10 mission (Davies and Batson, 1975). The source of map data was the Mariner 10 television experiment (Murray, 1975).

ADOPTED FIGURE The map projections are based on a sphere with a radius of 2439 km.

The polar stereographic projection is used for this sheet, with a scale of 1:4,290,000 at lat 65°. Latitudes are based on the assumption that the spin axis of Mercury is perpendicular to the plane of the orbit. Longitudes are positive westward in accordance with the usage of the International Astronomical Union (IAU, 1971). Meridians are numbered so that a reference crater named Hun Kal (lat 0.2° S) is centered on long 20° (Murray and others, 1974, Davies and Batson 1975). CONTROL

Planimetric control is provided by photogrammetric tri-angulation using Mariner 10 pictures (Davies and Batson, 1975). Discrepancies between images in the base mosaic and computed control point positions appear to be less than 2 km, except for the area east of about 90°. Pictures of this area are so foreshortened that accurate map transformations were not possible. Since the base mosaic was controlled by a later iteration of the control net, discrepancies as large as 20 km exist between this sheet and the Victoria (H-2) and Shakespeare (H-3) sheets to the south. These discrepancies were adjusted within the area north of lat 70° . MAPPING TECHNIQUES

Mapping techniques are similar to those described by Batson (1973a, 1973b). A mosaic was made with pictures that had (1973a, 1973b). A mosaic was made with pictures that had been digitally transformed to the polar stereographic projection. Shaded relief was copied from the mosaics and portrayed with uniform illumination with the sun to the west. Many Mariner 10 pictures besides those in the base mosaic were examined to improve the portrayal. The shading is not generalized and may be interpreted with nearly photographic reliability (Inge, 1972, Inge and Bridges, 1976). Shaded relief analysis and representation were made by J. L. Inge. COLOR

The color of the shaded relief was selected for optimum discrimination of detail and is not intended to represent the color of Mercury even approximately.

NOMENCLATURE All names on this sheet are approved by the International Astronomical Union. The provisional quadrangle name "Goethe" (appearing on early index maps) was changed to "Borealis" in 1976 by the IAU (IAU, 1977).

Abbreviation for Mercury (Hermes) sheet number 1.

H 5M 90/0 R: Abbreviation for Mercury (Hermes)
1:5,000,000 series; center of sheet, 90° N
latitude, 0° longitude; shaded relief map, R. REFERENCES

Batson, R. M., 1973a, Cartographic products from the Mariner 9 mission: Jour. Geophys. Research, v. 78, no. 20, p. 4424-

— 1973b, Television cartography: U.S. Geol. Survey open-file rept., 35 p.
Davies, M. E., and Batson, R. M., 1975, Surface coordinates and cartography of Mercury: Jour. Geophys. Research, v. 80, no. 17, p. 2417-1430.
Inge, J. L., 1972, Principles of lunar illustration: Aeronaut.

Chart and Inf. Center Ref. Pub., RP-72-1, 60 p.
Inge, J. L., and Bridges, P. M., 1976, Applied photointerpretation for airbrush cartography: Photogram. Eng. International Astronomical Union Commission 16, 1971.
Physical study of planets and satellites, in Proc. 14th
General Assembly 1970: Internat. Astron. Union Trans.,

v. XIVB, p. 105-108.

1977, Physical study of planets and satellites in Proc.
16th General Assembly 1976: Internat. Astron. Union

Trans. (in press).

Murray, B. C., Belton, M. J. S., Danielson, G. E., Davies,
M. E., Gault, D. E., Hapke, Bruce, O'Leary, Brian, Strom, M. E., Gaurt, D. E., Hapke, Bruce, O'Leary, Brian, Strom, R. G., Soumi, Verner, and Trask, Newell, 1974, Mercury's surface: Preliminary description and interpretation from Mariner 10 pictures: Science, v. 185, no. 4146, p. 169-179. Murray, B. C., 1975, The Mariner 10 pictures of Mercury: An overview: Jour. Geophys. Research, v. 80, no. 17, p. 2342-2344.

(Liguria) (H-4) H 5M 45/225

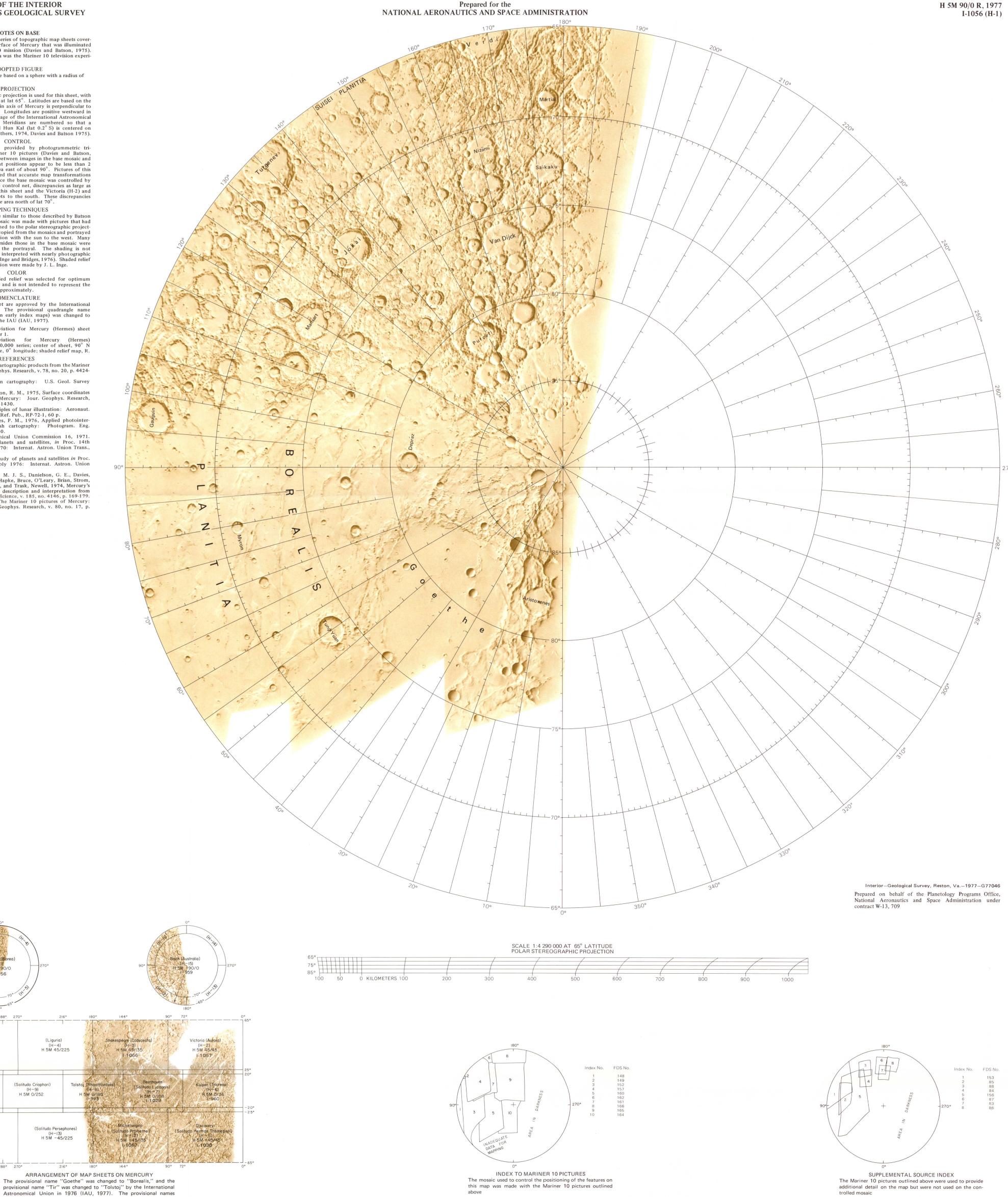
(Solitudo Persephones) (H-I3) H 5M -45/225

published shaded relief map.

appeared on earlier editions of this index map as well as on the Tolstoj (H-8) quadrangle of Mercury. The number preceded by I refers to

(H-IO) H 5M 0/324

(Cyllene) (H-I4) H 5M -45/3I5



SHADED RELIEF MAP OF THE BOREALIS AREA OF MERCURY (BOREA ALBEDO PROVINCE)

1977